

# RECREATIONAL BOATING IN MARYLAND

## *An Economic Impact Study*



BY DOUGLAS W. LIPTON  
AND SCOTT MILLER



A Maryland Sea Grant  
Extension Publication

# RECREATIONAL BOATING IN MARYLAND

## *An Economic Impact Study*

By Douglas W. Lipton  
and  
Scott Miller

Department of Agricultural and Resource Economics  
University of Maryland  
College Park, Maryland

Prepared for the  
Marine Trades Association of Maryland  
and the  
Boating Administration  
Maryland Department of Natural Resources



A Maryland Sea Grant  
Extension Publication

## ACKNOWLEDGMENTS

This study relied greatly on the assistance of Beth Kahr of the Marine Trades Association of Maryland (MTAM). MTAM members who provided guidance and oversight were Mitch Nathanson and David Morrow. From Maryland Department of Natural Resources, Bruce Gilmore (Director, Boating Administration) and Mark M. Bundy (Administrator, Economic Analysis, Power Plant and Environmental Review, Tidewater Administration) helped provide direction to the study. David Rohall and Dana Wagner of the University of Maryland Survey Research Center assisted in survey design and delivery. Garry Brown and John DeLury provided technical assistance in all phases of the study. The study could not have succeeded without the cooperation of the Maryland recreational boating public and the Marine Trades firms who took the time to participate in the survey.

The study was funded by the Maryland Boating Administration, Maryland Department of Natural Resources, and the Marine Trades Association of Maryland. Support was also provided by the Maryland Sea Grant College Program and the University of Maryland Cooperative Extension Service.

Publication numbers  
UM-SG-MAP-95-02  
Maryland Sea Grant Extension Program

Copies of this Maryland Sea Grant Extension Program Publication are available from:

Maryland Sea Grant College Program  
0112 Skinner Hall  
University of Maryland System  
College Park, Maryland 20742

This publication is made possible by grant NA-86AA-D-SG006, awarded by the National Atmospheric Administration to the University of Maryland Sea Grant College Program.

---

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, University of Maryland at College Park, and local governments. Thomas A. Fretz, Director of Cooperative Extension Service, University of Maryland at College Park.

---

The University of Maryland is equal opportunity. The University's policies, programs and activities are in conformance with pertinent Federal and State laws regarding race, color, religion, age, national origin, sex and disability. Inquiries regarding compliance with Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Educational Amendments; Section 504 of the Rehabilitation Act of 1973; and the Americans With Disabilities Act of 1990; or related legal requirements should be directed to the Director of Personnel/Human Relations, Office of the Dean, College of Agriculture, Symons Hall, College Park, MD 20742.

# CONTENTS

---

Profile of Recreational Boating in Maryland and Its Economic Impact . . . . .	5
Introduction . . . . .	7
Previous Studies of Recreational Boating Economic Activity . . . . .	7
Economic Impact Analysis — An Overview. . . . .	8
Maryland Boating Activity and Trip-Related Expenditure Estimates . . . . .	11
Recreational Boater Survey — Obtaining Data on Expenditures. . . . .	11
Annual Trip-Related Expenditures . . . . .	12
Annual Boat-Related Expenditures. . . . .	13
New and Used Boat Sales . . . . .	14
Total Annual Expenditures . . . . .	15
Expenditures by County. . . . .	15
Impact of Recreational Boating on the Maryland Economy . . . . .	17
Employment Impacts . . . . .	18
Personal Income Impacts . . . . .	18
Total Income Impacts. . . . .	18
Fiscal (Tax) Impacts. . . . .	19
Output Impacts. . . . .	19
Economic Value vs. Economic Activity . . . . .	20
Appendix . . . . .	21
Economic Impact Analysis. . . . .	21
IMPLAN Model. . . . .	21
Non-IMPLAN Sectors. . . . .	24
Detailed Economic Impacts of Recreational Boating . . . . .	27
Glossary. . . . .	33
Literature Cited . . . . .	35

# PROFILE OF RECREATIONAL BOATING IN MARYLAND AND ITS ECONOMIC IMPACT

---

A study to determine the economic impact of recreational boating to Maryland was conducted by researchers at the University of Maryland during the summer of 1994. The study was funded by the Maryland Boating Administration, Maryland Department of Natural Resources, and the Marine Trades Association of Maryland. Its aim was to evaluate the spending by boaters and how that spending affects both the state economy and Maryland businesses, from marine-related firms such as marinas and boat dealers to restaurants and service establishments.

Based on 190,436 registered and documented boats in Maryland in 1993, the analysis by the Maryland Sea Grant Extension Program employed detailed survey questionnaires of boaters. The Department of Natural Resources Boating Administration and the Marine Trades Association of Maryland assisted in the design and sample selection of the survey. The University of Maryland Survey Research Center conducted the survey.

Survey responses provided measures of expenditures and spending patterns (i.e., food and lodging, fishing supplies, boat fuel, transportation) by owners of trailered powerboats, in-water powerboats and sailboats. To estimate expenditures by all recreational boaters, the average expenditures for each class of boat was then multiplied by the number of registered boats of that class. In 1993, the registered and documented boats were as follows:

Trailered powerboats:	100,087
In-water powerboats	60,021
Sailboats	30,328

To determine the economic activity generated by the recreational boating industry, an impact analysis model (IMPLAN) was used to assess how expenditures generated by the recreational boating industry affected various aspects of the state economy, for instance, the effect recreational boating has on income and jobs. To better match the spending by boaters with Maryland's marine trades industry, the IMPLAN model which is in wide use nationally for such economic assessments, was modified with data unique to Maryland's industries; this modification was accomplished on the basis of a survey questionnaire to more than 300 marine trades firms in the state. The following summarizes boater expenditures and the resulting economic activity.

## ***Expenditures by Boat Owners***

- Spending related to recreational boating in 1993 totaled \$1.01 billion; this sum is derived from:

Boating trips:	\$438 million
Boating-related spending:	\$428 million
Purchase of new/used boats:	\$144.5 million
- Average annual trip-related expenditures for each registered boater:

Trailered powerboats:	\$1,283
In-water powerboats:	\$1,192
Sailboats	\$ 720
- Average annual boat-related expenditures for each registered boater:

Trailered powerboats:	\$1,196
In-water powerboats:	\$2,894
Sailboats	\$4,454
- Total annual spending (trip plus boat-related expenses plus new and used boat purchases) by each boater averaged \$5,311.

## ***Economic Activity (Based on IMPLAN Model)***

- Over \$356 million in total personal income (includes wages) was attributable to spending by recreational boaters.
- Total income from boater spending (the sum of business profits, proprietor income and personal income) was \$574 million.
- Of the \$1.01 billion in expenditures by recreational boaters, approximately 34% results in wages and compensation to Maryland employees.
- The average \$5,311 spent by each boater produced \$5,136 of additional economic output.
- The \$1.01 billion spent by boaters produced \$980 million of new economic activity.
- Over 18,000 full-time equivalent jobs in all sectors of economy can be attributed to the spending by Maryland-registered recreational boaters.
- Every 10.5 registered or documented boats is equivalent to one job.

The estimates above do not include the spending of transient boaters and others who spend money with Maryland marine trade industries, but who are neither registered or documented for principal use in Maryland. Since Maryland is a boating center that attracts boaters from all over the coast, it is likely that the total contribution of marine trades-related spending is significantly higher than estimated in this study.

# INTRODUCTION

---

What are the economic impacts of boating activity on the Maryland economy? More specifically, what is the relationship between spending on recreational boating and employment, personal income, total income and total economic output in the State? These are questions that this economic impact analysis set out to answer. The analysis takes into account that purchases of new and used boats, equipment, and the spending associated with boating activity create employment, income and tax revenues for the State and for counties. Obviously policies and programs that affect boat sales and the level of boating activity have an effect on this economic impact. For example, as improvements in water quality in the Chesapeake Bay lead to increased fishing and swimming and the general enjoyment of the Bay by boaters, the demand for boating increases. It follows that the economy of the State, and particularly the counties with a relatively large marine trade base, are positively affected. In contrast, events that reduce the demand for boating such as a luxury tax on new boats or rising fuel costs have subsequent negative effects on the marine trade contribution to Maryland's overall economy.

## *Previous Studies of Recreational Boating Economic Activity*

In 1983, the University of Maryland Sea Grant Program and the Maryland Department of Natural Resources supported a survey on recreational boating expenditures (Graefe, 1985); its major conclusion was that recreational boating activity by Maryland-registered boaters generated \$400 million in direct expenditures within the State.

In 1985, Maryland Sea Grant conducted a limited survey at the Annapolis-based U.S. Sailboat Show and the U.S. Powerboat Show to determine the direct impact of the boat shows on the Annapolis economy. Expenditures on lodging, restaurants, entertainment, etc., at those shows by patrons and exhibitors were estimated at \$14 million in the City of Annapolis alone, and another \$1.8 million in the rest of Maryland (Fedler and Schwartz, 1986).

The marine trades industry has gone through significant fluctuations since these studies were conducted. In 1988, for example, U.S. retail expenditures on recreational boating peaked at around \$18 billion, plummeted to \$10.3 billion by 1992 and rose to \$11.3 billion in 1993. The steep decline between 1988 and 1992 has been attributed to the federal luxury tax on new vessels costing over \$100,000, which has since been repealed, and to an economic recession in 1990-1991.

In 1994, the Marine Trades Association of Baltimore County funded an analysis of the economic impact of the recreational marine industry to Baltimore County during 1993 (PCA, 1994) — the study estimates that impacts range from \$130 to \$165 million per year. Total employment related to marine recreation is estimated at 1,327 full-time equivalent

jobs. Comparisons between the Baltimore County study and the statewide study we report on here must be made with caution because of the different methodologies employed.

## ***Economic Impact Analysis — An Overview***

To estimate the total economic activity generated by a sector of the economy, it is necessary first to determine the total spending that occurs within that sector. For an economic impact analysis of the recreational boating industry, this means determining the total amount spent by Maryland boaters. Because of the diffuse nature of such spending, the best approach is to obtain estimates of spending and spending patterns directly.<sup>1</sup> Therefore, boaters registered in Maryland, or owners of documented vessels principally used in Maryland, were surveyed regarding how much they spent on boating activities during the 1993 calendar year in different Maryland counties. These direct estimates of spending patterns can then be used to calculate total recreational boating expenditures.

The sample included non-Maryland residents who have boats registered or documented in Maryland. However, expenditures by boaters registered or documented in other states were not included because of the expense of conducting such surveys. Thus, a boater registered in Delaware who spends most of the time boating on the Chesapeake Bay is not included in the estimates that follow. With Maryland being a major destination for boaters registered in other states, there is a significant amount of expenditures not captured by this analysis.

Using total boating expenditures, different aspects of economic activity can be calculated. The *direct economic activity* is the amount of the total expenditures that do not leave Maryland. For many goods not manufactured in Maryland, the economic activity generated only includes the retail and wholesale margin or value added (revenues minus the cost of goods sold). For services and goods manufactured in Maryland, the entire expenditure counts towards direct economic activity.

The portion of expenditures that leaves Maryland and does not contribute to economic activity within the State is referred to as *leakage* (Radtke et al., 1987). However, the economic impacts do not end there. For example, when a boat is serviced in a boatyard, that boatyard may purchase supplies and materials from other Maryland marine trade firms. Those firms make additional purchases from other Maryland firms, and so on. The additional rounds of spending initiated by the boater's increased spending is the *indirect economic activity* generated by recreational boating — it is a measure of the effect of spending by those industries directly impacted by recreational boaters. To calculate the indirect activity generated by boater spending, it is necessary to account for the spending patterns of the marine trades industry in Maryland. That is, identifying what sectors of the economy marine trades deal with, and what proportion of marine trades revenues go to each sector. This informa-

---

<sup>1</sup> This approach is preferable to the alternative of determining total expenditures by surveying firms involved in that sector to evaluate their total sales. It is just not practical to survey all the industries where boaters make expenditures, because many of the firms (e.g., restaurants, grocery stores, etc.) service many more non-boaters than boaters.



tion is also necessary to determine the wholesale and retail margins for the direct economic activity estimates.

To determine the relationships between expenditures and how they impact economic activity, we employed the Impact Analysis for Planning (IMPLAN) model, a computer based input-output program that is often used to estimate the impacts that expenditures have on different sectors of the economy. An input-out model describes the technical relationship between the producing sectors of the economy (inputs) and the consuming sectors (outputs). The direct and indirect spending related to recreational boating leads to employment and income for the affected industry sectors. Employee wages and proprietor income in turn go to purchase other consumer goods and services in the economy that may not include the marine trades sector. For example, individuals employed in a boatyard might use part of their wages to go recreational boating; they might also use part of their wages to buy food or clothing or go a restaurant or a movie. These are examples of induced economic activity and induced activity is also estimated from the IMPLAN model. The Appendix gives a summary of the steps involved in the IMPLAN analysis and provides results from that analysis.

# MARYLAND BOATING ACTIVITY AND TRIP-RELATED EXPENDITURE ESTIMATES

---

## *Recreational Boater Survey — Obtaining Data on Expenditures*

The survey of recreational boaters was the starting point for our analysis of the economic activity that recreational boating generates in Maryland. The Maryland Department of Natural Resources maintains a database of registered and documented boats in Maryland, which they made available to the Marine Trades Association of Maryland. The Association performed a random selection and supplied the mailing labels for the survey to the University of Maryland Survey Research Center, which helped develop the survey questionnaire on boating expenditures. A sample of 1,159 boaters was randomly drawn from the 1993 boating registration database of 190,436 registered boats. The random sample was broken down by county to get estimates of boating expenditures by county. Counties with fewer registered boaters were sampled at a greater rate to ensure enough survey returns came from each county for validity of the statistical analysis.

The survey was pre-tested by sending an initial mailing to 101 boaters. Both respondents and non-respondents were interviewed by telephone to review the questionnaire and to determine possible problems in filling out and returning the completed forms. The questionnaire was then modified before mailing to the remainder of the sample. The revised surveys were mailed on August 8, 1994. Extensive tracking procedures were developed to monitor returns and assure that the sample was updated, removing anyone who had sold their boat, was deceased, or was disqualified for other reasons. After one week, a postcard was mailed reminding boaters to fill out and return the survey forms. The recreational boat owners sample yielded a 46% response rate after the first mailing and follow-up postcard. A second postcard was mailed two weeks later to non-respondents, and new survey forms were sent to boaters who had not responded by mid-September. A total of 672 survey forms were returned, a final response rate of 60%.

The boating survey asked for information about boat trip behavior (i.e., trip origin and destination), average daily expenses, overnight expenses, and the annual costs of keeping and maintaining a boat. Copies of the surveys are available from the authors.

Expenditures by recreational boaters were divided into three categories: (1) average daily trip expenses; (2) average expenses for overnight trips; and (3) annual non-trip related expenditures, e.g., slip, repair, supplies. Average daily trip expenses were multiplied by the

percentage of boaters who reported taking any daily trips, the average number of trips by boaters who did take trips and the total number of boats to obtain the estimate of total annual trip-related expenditures. Trip-related expenditure estimates were broken down by various categories: whether the boat was trailered or kept in the water; whether it was a sailboat or powerboat; and by various size categories within these groups. Specific estimates by size category are available from the authors. The information reported here is aggregated across size classes for ease of presentation.

## *Annual Trip-Related Expenditures*

Boaters were asked about their typical spending in various expenditure categories on daily and overnight boat trips. They were also asked about the number of daily and overnight trips they took during 1993. Annual trip expenditures for each boater were calculated by multiplying the stated number of trips by the estimated expense in each category. Table 1 summarizes annual trip-related expenditures for trailered powerboats, in-water powerboats and sailboats. Trailered and in-water powerboats have similar expenditures of \$1,283 and \$1,192, respectively, while sailboat expenditures of \$720 are significantly less, reflecting the lower boat fuel use.

Table 1. Typical annual trip-related expenditures per boater in 1993.

Expenditure Category	Trailered powerboats	In-water powerboats	Sailboats
Food & Lodging	\$580	\$685	\$554
Fishing Supplies	163	43	5
Boat Fuel	259	312	39
Transportation	140	31	9
Other	142	121	113
TOTAL EXPENDITURE	\$1,283	\$1,192	\$720
Number of Boats	100,087	60,021	30,328
Mean of Trips per Boater	27	22	24

For all three classes of boats, food and lodging are the largest expenditures. For powerboats, fuel is the next highest, though because of their size in-water boats account for a greater amount than trailered boats. Transportation costs, to and from the launch site, are highest for trailered boats, offsetting their savings over in-water boats in regard to boat fuel.

The dollar values for annual trip expenditures are for boaters who took day and overnight trips. These numbers are adjusted in the calculations for total expenditures by the percentage of boaters who indicated that they did not take day trips or did not take overnight trips. Expenditures are then multiplied by the number of registered boats in each size category to estimate the total spending on recreational boating trip-related expenditures in 1993; the total is \$438,454,999 (Table 2).

Table 2. Estimates of total annual expenditures by all recreational boaters on trip-related categories in 1993.\*

Expenditure Category	Trailered powerboats	In-water powerboats	Sailboats
Food & Lodging	\$79,778,865	\$75,517,719	\$88,763,370
Fishing Supplies	25,648,689	3,241,876	795,467
Boat Fuel	41,657,538	33,049,522	6,381,472
Transportation	22,323,821	1,158,062	1,486,500
Other	21,139,853	16,408,042	21,104,204
<b>TOTAL</b>	<b>\$190,548,766</b>	<b>\$129,375,221</b>	<b>\$118,531,012</b>

\*The sum total of trip-related spending for the three classes of boats is \$438,454,999.

## *Annual Boat-Related Expenditures*

Boaters were asked about their annual boat-related (in contrast to trip-related) expenditures for the 1993 season. These expenditures include items like boat loan payments, slip fees, boat maintenance and repair, boat supplies, insurance and other boating-related purchases. Estimates were made of spending for different size categories of power and sailboats, but only the total estimates are presented in Table 3.

Table 3. Average annual boat-related expenditures per boater in 1993.

Expenditure Category	Trailered Powerboats	In-water Powerboats	Sailboats
Boat Loan	\$191	\$1,154	1,311
Insurance	81	195	274
Slip/Marina/Yacht Club	23	482	1,262
Dry Storage	18	95	182
Engine—new	50	67	51
Engine—maintenance & repair	235	274	177
Equipment (inc. sail) — new	258	87	133
Equipment (inc. sail) — maintenance & repair	84	139	316
Electronics — new	42	81	107
Electronics — maintenance & repair	57	50	51
Haul/Paint/Boatyard	21	203	424
Other	136	68	164
<b>TOTAL</b>	<b>\$1,196</b>	<b>\$2,849</b>	<b>\$4,454</b>
Number of Boats	100,087	60,021	30,328

One must be cautious in comparing the expenditure estimates across the three categories in Table 3. The typical trip expenditures estimated in the previous section were for only those boaters who took trips — these expenditures were then adjusted for boaters who did not take trips to obtain total estimates. The boat-related expenditures in Table 3 are averages across all the boaters in the category regardless of whether they had an expenditure. For example, the average trailered powerboat owner only spends \$50 on a new engine. New

engines, of course, cost much more than this, but only a small fraction of the boaters purchase new engines in a year. Average expenditures of \$2,894 for in-water power boats were 2.4 times more than \$1,196 for trailered boats. Sailboats had significantly higher slip and boatyard fees with spending 1.5 times in-water power boats.

These average annual expenditures are converted to total annual boat-related expenditures by multiplying by the total number of boats in the various size categories for which the estimates were computed — a sum total of \$428,489,842 was spent in 1993. Table 4 provides a summary of expenditures.

Table 4. Total Maryland boat-related expenditures in 1993.\*

Expenditure Category	Trailered Powerboats	In-water Powerboats	Sailboats
Boat Loan	\$19,101,384	\$69,269,464	\$39,757,865
Insurance	8,112,216	11,712,604	8,316,447
Slip/Marina/Yacht Club	2,316,998	28,926,423	38,264,570
Dry Storage	1,777,912	5,693,046	5,532,291
Engine — new	4,963,266	4,046,994	1,551,283
Engine — maintenance & repair	23,556,958	16,457,082	5,382,203
Equipment (inc. sail) — new	25,821,844	5,194,377	4,026,740
Equipment (inc. sail) — maintenance & repair	8,384,388	8,313,638	9,582,282
Electronics — new	4,183,308	4,833,276	3,257,796
Electronics — maintenance & repair	5,730,917	2,988,809	1,559,134
Haul/Paint/Boatyard	2,133,623	12,165,915	12,862,363
Other	13,624,860	4,101,082	4,986,484
TOTAL	\$119,707,674	\$173,702,709	\$135,079,459

\*The sum total of annual boat-related expenditures for the three classes of boats is \$428,489,842.

## *New and Used Boat Sales*

In addition to the trip and boat-related expenditures estimated above, recreational boaters make expenditures on new and used boats. We did not attempt to measure the sale of used boats from private individual to private individual, as this simply represents a transfer within the region that creates no net economic impact. In contrast, used boat sales through brokers generate income through the broker commissions that add to the economic impact in the region. New boat sales also contribute to economic activity.

The best source of information on new and used boat sales is the Maryland Department of Natural Resources Licensing and Vessel Registration Service's records which are kept for collection of excise taxes. According to this office, 8,900 new and used boats were sold by dealers and brokers in 1993. The total value of these sales was \$144,515,628.

Since new boat sales by dealers involve different financial transactions than used boat sales by brokers, our economic analysis models them separately. In order to allocate the expenditures to the new and used category, we relied on our boater survey. Boaters were asked the year their boat was purchased and the model year of the boat. If the purchase year and model year were both 1993, then the boat was treated as a new purchase. If the pur-

chase year was 1993, but the model year was earlier, the purchase was treated as a used boat purchase. Boaters were also asked if the purchase was from an individual or a broker. Based on the responses, it was determined that half of the total new and used boat expenditures was on new boats, and half on used boats purchased via a broker.

## ***Total Annual Expenditures***

The estimated total expenditures of recreational boaters registered or documented in Maryland was \$1,011,457,468. This total is the sum of trip-related expenditures (\$43,845,999, Table 2), boat-related expenditures a(\$428,489,842, Table 4) and new and brokered used boat sales (\$144,515,628). This total includes some double counting because the amount included under new and brokered used boat sales may also show up as principal in the boat loan payment amount estimated under boat-related expenditures. Although this double counting creates some overestimate in total expenditures, we make adjustments when the economic activities are calculated in the next section. This adjustment is made by considering the interest amount of the boat loan as counting toward economic impact, and not the principal payment which is counted in the boat sale price.

## ***Expenditures by County***

Some Maryland counties have a greater concentration of boating activity and expenditures than others. It is difficult to make the allocations of spending among counties because boaters may spend money in a variety of counties during the course of the year. To estimate the spending by county, we have to make several assumptions about the county where the spending occurred.<sup>1</sup> We assume that the following expenditures occur in the county in which the boater lives: transportation to launch site, groceries, boat loan payment, insurance, taxes, magazines and publications. All other expenses occur in the county where the boat is launched from, except when boaters indicated that they went ashore during their boat trip in a county other than the starting county. In that case, lodging and restaurant meals are allocated to the county indicated where shore-based purchases were made. It is also difficult to determine the county in which new or used boat purchases are made; therefore, these are not included in the estimate of expenditures by county. Based on these assumptions, the allocation of trip and boat-related expenditures by county is estimated and presented in Table 7. Anne Arundel County was far ahead of any other Maryland county with 22% of boating expenditures.

---

<sup>1</sup>Alternatively, we could have asked survey respondents about where their spending occurred. However, the recall of expenditures over a year is problematic, and would have led to suspect survey results. The desired methodology to obtain precise estimates of spending by county would be to have a sample of boaters keep spending diaries for the year.

Table 7. Allocation of recreational boating expenditures by county in 1993.\*

County	Recreational Boating Expenditure
Allegany	\$4,777,887
Anne Arundel	191,472,308
Baltimore City	6,518,814
Baltimore County	97,100,890
Calvert	23,148,162
Caroline	3,372,324
Carroll	8,237,172
Cecil	36,225,382
Charles	15,860,608
Dorchester	9,296,631
Frederick	10,546,484
Garrett	9,055,285
Harford	20,691,625
Howard	8,201,133
Kent	18,840,864
Montgomery	23,208,847
Prince George's	28,969,251
Queen Anne's	24,307,426
St. Mary's	22,998,041
Somerset	6,040,339
Talbot	19,502,317
Washington	7,942,472
Wicomico	9,134,604
Worcester	15,416,375
Out-of-State	246,079,599
Unclassified	38,678,223
<b>TOTAL</b>	<b>\$866,944,840</b>

\*Does not include new and used boat purchases.

# IMPACT OF RECREATIONAL BOATING ON THE MARYLAND ECONOMY

---

The total boating expenditures related to recreational boating are only the starting place for determining the actual economic impact of spending as it ripples and multiplies through the state economy. Expenditures on such items as restaurants, clothing and boat supplies, impact various sectors of the economy, for example, producers, wholesalers, retailers, and the transportation industry. The Impact Analysis for Planning (IMPLAN) model is an input-output computer model for estimating those impacts (see Appendix). It takes into account what percentage of each expenditure is distributed among the retail, wholesale, transportation and producing sectors. For example, if a boater spends \$1.20 per gallon of gasoline, that expenditure is allocated to each of these sectors according to the IMPLAN margins by multiplying \$1.20 times the margin percentage. Table 8 provides an example of how \$1.20 for a gallon of gasoline for the boater's car is distributed: only 28%, or \$0.34, of the purchase price goes to the retailer and wholesaler; while 68%, or \$0.82, goes to the producer. Since there is very little petroleum produced in Maryland, the bulk of the purchase price goes to the refinery which is out-of-state; thus, the impact of fuel purchases on the Maryland economy is small. Finally, the IMPLAN model accounts for the multiplying effect that expenditures have on the economy in terms of direct and indirect effects, for instance, jobs and compensations.

Table 8. Using IMPLAN margins to allocate a \$1.20 expenditure on a gallon of gasoline.

IMPLAN Sector	IMPLAN Margin Percentage	Expenditure Amount by IMPLAN Sector
Service Station	17%	\$0.204
Wholesale	11%	\$0.132
Transportation	4%	\$0.048
Producer	68%	\$0.816
TOTAL	100%	\$1.20

The following discussion summarizes the results of the economic impact analysis. The Appendix gives details on the IMPLAN model as well as specific data for calculating the impacts.



## ***Employment Impacts***

Table 9 summarizes the employment impacts of Maryland recreational boating in terms of full-time equivalent employment. Spending on recreational boating in the state results directly in 8,914 FTE jobs. Given the seasonal nature of the employment, substantially larger numbers of individuals are actually employed by the industry during the peak boating season. An additional 1,600 FTE jobs are created in other sectors of the Maryland economy that are not directly part of the marine trades sector, but that do support it, i.e., construction. The wages and income generated by these industries lead to additional spending in the state, spending that in all sectors of the Maryland economy stimulates another 7,490 FTE jobs. In total, 18,000 FTE jobs can be attributed to the spending that occurs from recreational boating. Based on 190,436 registered boats, approximately one full-time equivalent job can be attributed to every 10.5 boats registered or documented in Maryland.

Table 9. Employment generated by Maryland's recreational boating sector in 1993.

	Direct	Indirect	Induced	Total
FTE's	8,914	1,600	7,490	18,004

## ***Personal Income Impacts***

Personal income measures wages and compensation to individuals. Direct personal income impacts represents wages and compensation paid to employees in the sectors where boating-related expenditures occur. These would include restaurant employees as well as marina employees. Table 10 summarizes the personal income impacts of recreational boat spending in Maryland. While direct compensation in 1993 was \$164,669,669, the indirect and induced income impacts brings the total to \$356,411,079. Of the \$1.01 billion in expenditures by boaters registered in Maryland, \$346.4 million results in wages and compensation to Maryland employees.

Table 10. Personal income impacts of Maryland's recreational boating sector in 1993.

	Direct	Indirect	Induced	Total
Personal Income	\$164,699,699	\$33,485,140	\$154,682,007	\$356,411,079

## ***Total Income Impacts***

Total income adds proprietor income and compensation to personal income. Table 11 summarizes the total income impacts of Maryland's recreational boating sector. An additional \$73.7 million in profit and other income increases the direct income effect of boater spending (\$164,699,699, Table 10) to \$238,447,152. The total income effect is \$573,914,963.

Table 11. Total income impacts of Maryland's recreational boating sector in 1993.

	Direct	Indirect	Induced	Total
Personal Income	\$238,447,152	\$63,031,029	\$270,343,265	\$573,914,963

## ***Fiscal (Tax) Impacts***

Procedures for determining the fiscal (tax income) implications of Maryland recreational boating are similar to those followed by the Maryland Department of Economic and Employment Development in a recent study of the economic impact of the Columbus Center (Ahmadi et al., 1992). Although taxes include state business tax receipts, these receipts are not estimated because of "the complexities in business taxes from industry to industry statewide, and the variation within firms for a given industry." However, the State and local income tax generated as a result of the industry income generation can be estimated: based on a 50% local surcharge on State income taxes, the state and local income tax generated from recreational boating expenditures is \$4.3 million. This amount is in addition to the estimated \$3 million in taxes paid directly by the boaters (see Appendix Table A-4) and \$7.2 million in state excise tax on boat sales. Local slip taxes, however, could not be estimated from the survey. Other taxes not estimated include state excise taxes on boat sales, and local slip taxes.

## ***Output Impacts***

Table 12 gives the effect of recreational boating expenditures on the economic output of the State of Maryland. Of the \$1.01 billion in expenditures by boaters, there is a large amount of leakage, expenditures that leave Maryland and do not contribute to economic activity in the state; thus, slightly more than half of the expenditures directly impact economic output in the State. However, the amount that does not leak from the Maryland economy generates substantial additional spending. Over \$978 million of the State's economic output can be linked to the spending of its 190,436 recreational boat owners. Thus, each registration is linked to an average of approximately \$5,136 of economic output in the State. The contribution of the marine trades is even greater if the effect of spending of boaters not registered in Maryland (e.g., transient boaters) is considered.

Table 12. Direct and total output impacts of Maryland recreational boating in 1993.

Output	Impact
Direct	\$525,826,065
Total	\$978,626,703

## *Economic Value Vs. Economic Activity*

While boating creates economic activity in the State as measured above, it also produces net economic value to the participants and industry. Value is measured as the net willingness-to-pay for the boating activity (i.e., the total individuals are willing-to-pay to go boating less what they actually expend in money and time) plus the additional profits and income the boating industry generates. The techniques used to measure value are markedly different from those used to measure economic activities. For example, Bockstael et al. (1987) estimated a change in net value to recreational boaters due to water quality improvements in the Chesapeake Bay by estimating boater demand and its dependence on water quality. Because recreational boating is a “non-market” activity (i.e., the household is both the producer and consumer of the recreational boating trip), there is no reason to believe beforehand that economic value and economic activity are positively correlated. That is, it is possible that activities with high net economic value have small economic impacts, and vice versa. Estimates of economic value are typically used in cost-benefit analysis of policies or actions. It would be appropriate to use a measure of the change in the net economic value of recreational boating as justification for improving water quality in the Chesapeake Bay. Economic impacts, as measured in this study, would provide additional information for the policymaker about the effects of water quality improvement on the Maryland economy, but would not enter directly into the cost-benefit equation.

# A P P E N D I X

## ECONOMIC IMPACT ANALYSIS

---

### *The Process*

The process of taking estimates of expenditures on boating and converting them to estimates of economic activity involves a complex series of activities as the flow chart (Figure A-1) indicates. The analysis began with estimates of total boating expenditures by Maryland registered boaters obtained via a mail survey (see page 10). Only expenditures made in Maryland are included in the estimates of economic activity, so the reported dollar amount has to be adjusted for out-of-state expenditures. These out-of-state expenditures are due to non-Maryland residents who have boats registered in Maryland, making boat and boat-trip related expenditures in their home state. Expenditures are calculated for typical trip expenses, and then multiplied by the total number of trips to obtain annual expenditure estimates. Other boat-related annual expenditures were calculated from the surveys and then added to the trip expenditures to obtain the estimate of total expenditures in Maryland.

To obtain estimates of direct, indirect, induced and total impacts of these expenditures, spending in each category is entered into the IMPLAN model. If the expenditure was on a service, the full expenditure amount is used, except it is multiplied by the Regional Purchase Coefficient (RPC), a percentage (ranging from 0 to 100%) from the IMPLAN model which indicates the capacity of the State of Maryland economy to supply the item or service in question. If the expenditure was on a good, the expenditure is first divided into its retail, wholesale, transportation and producer margins, as provided by IMPLAN. The margins at each level provide the amount that is used to determine the economic impact. The amounts after adjusting for margins and RPC's for each of the expenditure categories are multiplied by the appropriate (employment, personal income, total income, and total output) multiplier from IMPLAN to determine the economic impact.

### *IMPLAN Model*

The total recreational boating expenditure in Maryland is the starting point for determining the economic activities estimated by the IMPLAN model. IMPLAN (IMPact Analysis for PLANning) was originally developed by the U.S. Forest Service and has gained wide acceptance in a variety of impact assessment environments. In addition to the Forest Service, the U.S. Army Corps of Engineers, the National Park Service, the Soil Conserva-

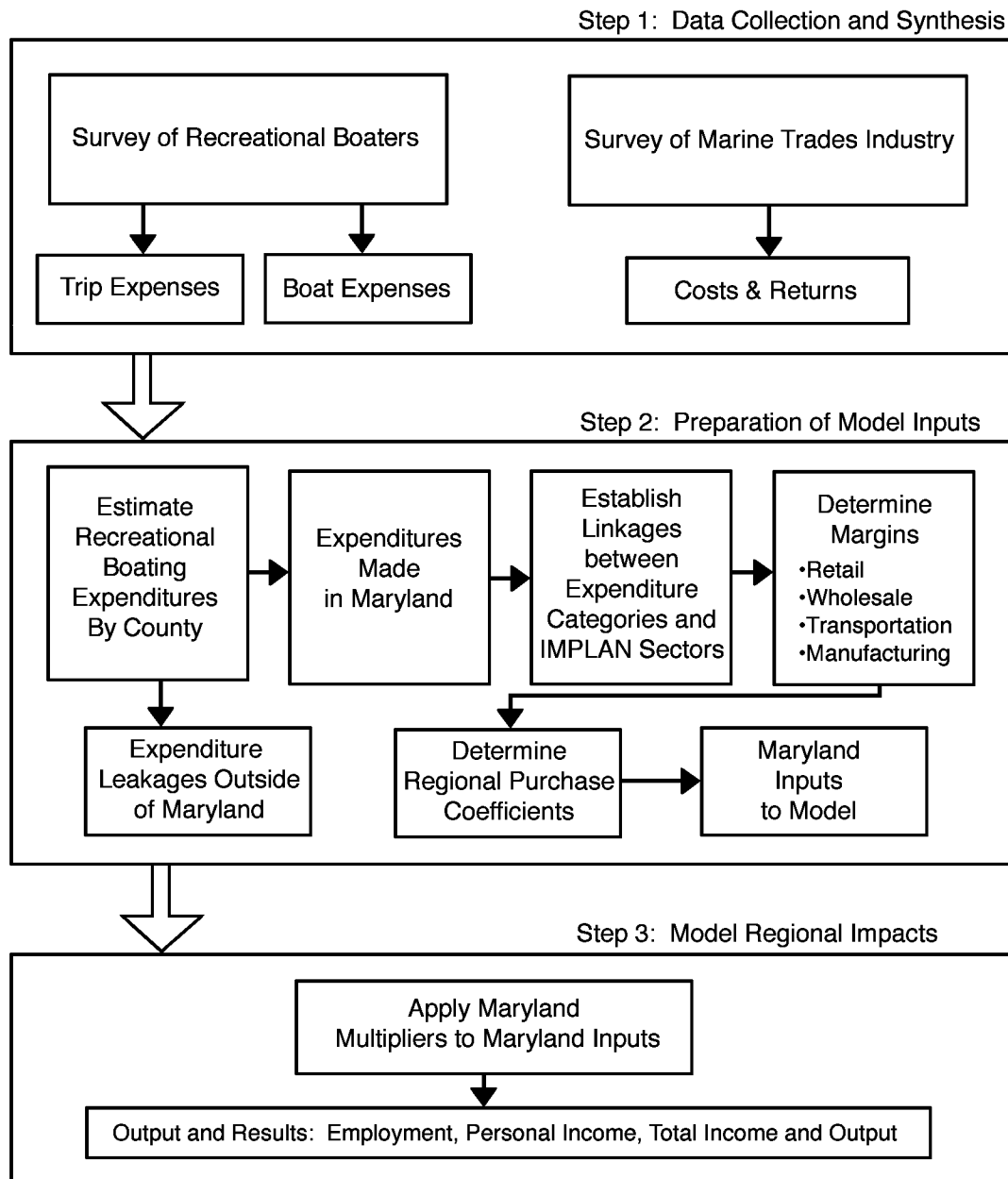


Figure A-1. Steps involved in recreational boating economic impact analysis.

tion Service, the Federal Emergency Management Agency, the Bureau of Land Management, over 40 universities, and numerous state and regional planning agencies have also used the model (A.T. Kearney, 1991).

IMPLAN divides the total national economy into 528 sectors related to agriculture, extraction, manufacturing, transportation, wholesale trade, retail trade, services and government. Data on these 528 industry sectors is based on national input/output or industry transaction tables (Minnesota IMPLAN Group, 1993). Since the input-output matrix uses

nationally averaged coefficients, it is assumed that industries in Maryland buy, sell and manufacture goods as the average of all other similar industries in the United States. The model is then regionalized based on the area of concern of the analysis. In Maryland, which is the relevant region, only 428 of the industry sectors exist. Running the basic IMPLAN model for the State yields the necessary employment, income and output multipliers to perform the analysis.

To estimate economic activity, each category of expenditure by the recreational boater must be matched to one or more of the IMPLAN sectors. In most instances, this matching is straightforward. For example, boater expenditures for lodging expenses can be matched to the IMPLAN Hotel and Lodging sector. In other cases the matching of expenditures to IMPLAN categories can be difficult, for example, there is no marina sector in IMPLAN. The marine trades survey conducted for this study provided the data necessary to match the expenditure with a custom category not represented in IMPLAN.

***Margins — Dividing Expenditures into Sectors.*** When boaters make expenditures for retail commodities, the expenditure must be allocated to the retail sector, the wholesale sector, the transportation sector and the producing sector before applying the IMPLAN multipliers. This allocation is necessary because each of those sectors will have their own set of multipliers. The mechanisms by which costs are allocated across these sectors are margins. Margins reflect the value added by each sector as a good moves from its initial place of production to its ultimate point of sale by the retailer; they are calculated as the revenue for an item minus the costs of goods sold. If the expenditures are in services such as at a marina, it is not necessary to calculate margins; the full expenditure is applied to the service sector and matched to an IMPLAN or custom multiplier.

The IMPLAN model includes margins for a broad range of commodities such as gasoline and electronics equipment. These margins are based on national averages. IMPLAN presents margins as percentages of the total revenue allocated to each sector. (The percentage margins are easily converted to absolute margins by multiplying the percentage times the revenue amount). The margins distribute the expenditure on the commodity to the retail, wholesale, transportation and producing sectors.

The allocation of expenditures by margins can have an important influence on the ultimate impact of expenditures. When concentrated in the retail and wholesale sectors, most of these expenditures are allocated to the producing sectors for the commodities purchased. If these producers are not located in Maryland, the allocation represents a leakage. As a result, there are no impacts from the production of these goods, only the value-added in Maryland from transportation, wholesaling and retailing. Thus, high expenditures on fuel purchases for boats and cars, for example, have a relatively low benefit to Maryland. If the total expenditure was included, without first breaking it down into the appropriate margins, the economic impacts could be seriously overestimated.

***Regional Purchase Coefficients (RPC).*** A regional purchase coefficient indicates the extent to which the demand for a good or service can be met by Maryland industry. Very little gasoline is refined in Maryland; consequently, the RPC for the production part of

the gasoline cost will be quite small, 0.001; for the retail purchase of gasoline at \$1.20 a gallon, \$0.82 goes to the producer or refiner (see Table 8). Since the RPC is so small for petroleum refining, virtually none of the \$0.82 impacts Maryland's economy ( $0.82 \times 0.001 = \$0.0008$ ). In states like Texas or New Jersey, the RPC would be quite high.

RPCs, expressed as percentages, are provided by IMPLAN for the 428 sectors of the Maryland economy. After expenditures are broken down using margins into the various IMPLAN sectors, they are then multiplied by the RPC before applying the economic activity multipliers (see below). Since the RPC's range from zero to 100%, the initial expenditure amount is usually greater than the amount applied to the industry multipliers.

**Multipliers.** The final variable needed in determining economic impacts in a regional economy are the economic activity multipliers. The multipliers estimate the amount of employment, income or output that a single unit (usually \$1.00) of expenditure generates, after it has been adjusted by the RPC.

Employment multipliers provide impacts in terms of full-time-equivalent (FTE) jobs. One FTE job equals one year of full-time employment for one person or its equivalent. Thus, one FTE could also equal two half-time jobs for one year or twelve persons working full-time for one month a year.

IMPLAN includes several income multipliers. For this project, two types of income impacts have been assessed: personal income and total income. As defined by IMPLAN, personal income equals employee compensation (wages and salaries), while total income includes personal income plus proprietor (self-employment) income and other property income (e.g., rent). A final set of multipliers relates to output. Output is a change in the final demand, or sales, of goods and services in the region. For output impacts, IMPLAN utilizes a Type I and modified Type III multiplier. The Type I output multiplier provides the relationship between the Maryland expenditures and the direct output or sales in the State. The Type III multiplier includes the additional indirect and induced effects created by the initial expenditure amount.

## ***Non-IMPLAN Sectors***

A marine trades industry survey was necessary to determine retail margins and the multiplier effects of boating expenditures for the specialized firms that make up the industry. For example, there is no IMPLAN category for marinas, boatyards, sailmakers and boat sales and brokers. To obtain the appropriate multipliers, we developed a representative cost and returns statement based on the marine trades industries that responded to a survey of Maryland marine trades firms. Since marine trades costs and profits can be placed in categories that do correspond to IMPLAN industry sectors, multipliers can be calculated as a weighted average of the multipliers for the cost and profit categories. The weights are the relative contribution of the cost items. In effect, the non-IMPLAN sectors are created as a composite of industry sectors that are included in IMPLAN.

**Marine Trades Survey — Margins and Transactions.** The marine trades industries were placed into 20 separate industry classifications. Industries in the Marine Trades Association of Maryland that are not uniquely marine such as banking were not surveyed since IMPLAN supplied data on those industries. Survey forms were mailed to all firms in the State of Maryland which are members of Marine Trades Association of Maryland. The survey was first pre-tested on a sample of 36 firms; following pre-test revisions, 307 surveys were sent to the industry, with similar follow-ups as described for the recreational boat owners. With 8 firms indicated as no longer being in the sample, the 146 responding firms represents a 49% response rate.

Margins of non-IMPLAN sectors for goods were directly calculated from the survey responses. Average margins, expressed as percent of revenues, for each industry sector providing goods was determined by dividing the total reported costs by revenues and subtracting from one. Table A-1 summarizes margins for the marine industries calculated from the survey. It was not necessary to calculate margins for the service sectors (i.e., marinas and boatyards).

Table A-1. Maryland marine trades industry margins (expressed as % of total revenues).

Industry	Margin (as % of total revenue)
Boatbuilding	14%
Boat Sales/Broker	15%
Engine Sales and Service	29%
Fuel Dock	20%
Sailmaker	29%

**Marine Trades Survey — Multipliers.** Survey data was also used to determine the employment, income and output multipliers for the expenditures that did not match IMPLAN sectors. A financial profile allocated industry expenditures into sectors that do match IMPLAN. A multiplier was then calculated as a weighted average of multipliers from the matching sectors where the weights are equal to the percent contribution of the matched sector cost of total costs. Table A-2 summarizes the industry profile for marinas and the matching IMPLAN sector and Table A-3 provide similar information for boatyard services.



Table A-2. Marina percentage of revenues used to calculate multipliers.

Item	IMPLAN Sector	% of Revenues
Net Revenue	Personal Consumption Expenditures (PCE)	18.2%
Boating Equipment	Motor Vehicle Parts & Accessories	0.8%
Maintenance Supplies	General Merchandise	1.0%
Office Supplies	Stationery Products	1.0%
Wages & Compensation	Personal Consumption Expenditures (PCE)	25.0%
Payroll Taxes & Benefits	State and Local Government	6.9%
Freight & Shipping	Motor Freight Transport	0.0%
Truck and Auto	Automotive Service	0.5%
Marketing	Advertising	1.6%
Building Rental	Real Estate	0.0%
New Construction	New Industrial & Commercial Building	3.8%
New Equipment	Farm Machinery & Equipment	0.3%
Equipment Lease	Equipment Lease	0.1%
Utilities	State & Local Electric Utilities	6.6%
Repairs & Maintenance	Maintenance & Repair	5.7%
Insurance	Insurance Brokers	5.5%
Interest	Banking	9.4%
Taxes	State & Local Government	9.7%
Professional Services	Accounting, Auditing, Bookkeeping	3.6%
Permits and Licenses	State & Local Government	0.2%

Table A-3. Boatyard costs and returns used to calculate multipliers.

Item	IMPLAN Sector	% of Revenues
Net Revenue	Personal Consumption Expenditures (PCE)	19.4%
Boating Equipment	Motor Vehicle Parts & Accessories	3.7%
Maintenance Supplies	General Merchandise	0.0%
Office Supplies	Stationery Products	0.7%
Wages & Compensation	Personal Consumption Expenditures (PCE)	47.2%
Payroll Taxes & Benefits	State and Local Government	4.4%
Freight & Shipping	Motor Freight Transport	0.2%
Truck and Auto	Automotive Service	0.3%
Marketing	Advertising	5.3%
Building Rental	Real Estate	5.6%
New Construction	New Industrial & Commercial Building	4.5%
New Equipment	Farm Machinery & Equipment	1.9%
Equipment Lease	Equipment Lease	0.1%
Utilities	State & Local Electric Utilities	0.6%
Repairs & Maintenance	Maintenance & Repair	0.3%
Insurance	Insurance Brokers	3.9%
Interest	Banking	0.7%
Taxes	State & Local Government	0.2%
Professional Services	Accounting, Auditing, Bookkeeping	0.8%
Permits and Licenses	State & Local Government	0.2%

Net revenues and wages were matched to an IMPLAN sector labeled Personal Consumption Expenditures (PCE). Net revenues and wages are funds available to be respent in the Maryland economy. IMPLAN provides a breakdown of how personal expenditures are made in Maryland among the 428 national IMPLAN sectors. The PCE multipliers were calculated by taking a weighted average of the 428 IMPLAN sectors where the weights were based on the percentage spending in each of the 428 sectors.

## ***Detailed Economic Impacts of Recreational Boating***

Table A-4 summarizes the calculations and data used for the impact analysis. Boating expenditures calculated from the survey are translated into economic impacts on the Maryland economy in terms of employment, personal income, total income and total output. Categories match the categories from the boater survey.

The first heading of Table A-4 lists the expenditure category for recreational boaters. The second heading provides a description of the IMPLAN Sector to which the expenditure category is matched. Those without a direct match are listed as a "custom sector." Heading 3 corresponds to the number assigned to each IMPLAN sector. Heading 4 gives the expenditure estimate for the category as determined from the boater survey. Heading 5 gives the estimated percentage of the expenditure that is actually made in Maryland; this amount times the corresponding figure under the expenditure estimate (heading 4) yields the amount initially spent in Maryland. The margin percentages are given under heading 7.

Before applying the multipliers, expenditure estimates are adjusted by the Maryland regional purchase coefficients (RPC's) from the IMPLAN model (heading 8). This adjusted amount is multiplied by the multipliers for employment (heading 9), personal income (heading 10), total income (heading 11) and output (heading 12). The direct, indirect, induced and total multipliers are shown in the table for employment (heading 13), personal (heading 14) and total income (heading 15). Heading 16 gives the output impacts.

Using the "expenditure categories" headings, it is possible to trace each impact to its initial expenditure. However, for most purposes, it is not necessary to know this level of detail. Typically, interest is in the total impacts. Totals are given in the last row of Table A-4. Tables 9-12 summarize these data for ease of exposition.

From Table A-4, heading 4, it can be shown that expenditures by Maryland-registered recreational boaters totaled \$1,011,457,468 million in 1993. This spending created \$978,626,703 (heading 16, last column) of new output; in other words, for each dollar of recreational boating expenditure, there was \$0.97 of additional activity.

Table A-4. Parameters and calculations for determining economic impacts of recreational boating.

(1) Expenditure Categories	(2) IMPLAN Sector Description	(3) IMPLAN Sector	(4) Expenditure Estimate	(5) MD Percent	(6) MD Total Expenditure	(7) Margin	(8) RPC
Lodging	Hotels and Lodging	463	\$34,772,666	100%	\$34,772,666	100%	75%
Restaurant meals	Eating and Drinking	454	\$89,312,092	95%	\$84,846,488	100%	95%
Groceries			\$119,975,196	87%	\$104,378,420		
Retail Margin	Food Stores	450			\$22,963,252	22%	98%
Wholesale Margin	Wholesale Trade	447			\$11,481,626	11%	95%
Transportation Margin	Motor Freight Transport	435			\$3,131,353	3%	82%
Producer	Miscellaneous Food & Sundries				\$67,845,973	65%	15%
Fishing & Other Trip Supplies			\$48,141,670	87%	\$41,883,253		
Retail Margin	Miscellaneous Retail	455			\$18,512,398	44%	95%
Wholesale Margin	Wholesale Trade	447			\$6,491,904	16%	95%
Transportation Margin	Motor Freight Transport	435			\$293,183	1%	82%
Producer	Sporting & Athletic Goods	421			\$16,585,768	40%	15%
Marina/Yacht Club	Custom Sector		\$122,707,701	100%	\$122,707,701	100%	100%
Boat Launch Fee			\$11,702,404	100%	\$11,702,404	100%	100%
Equipment Rental	Amusement and Recreation	488	\$3,480,297	100%	\$3,480,297	100%	100%
Other Trip Supplies	Recreation-Related Retail		\$18,455,639	100%	\$18,455,639	100%	100%
Boat Fuel Costs			\$81,088,532	95%	\$77,034,105		
Docking and Mooring			\$25,013,759	100%	\$25,013,759	100%	100%
Retail Margin	Service Station (w/modification)	451			\$15,406,821	20%	100%
Wholesale Margin	Gas Production and Distribution	444			\$7,703,411	10%	35%
Transportation Margin	Motor Freight Transport	435			\$2,002,887	3%	85%
Producer	Petroleum refining	210			\$51,920,987	67%	1%
Transportation			\$24,968,382	87%	\$21,722,492		
Retail Margin	Service Station	451			\$13,095,798	17%	95%
Wholesale Margin	Gas Production and Distribution	444			\$8,473,752	11%	35%
Transportation Margin	Motor Freight Transport	435			\$2,773,228	4%	85%
Producer	Petroleum refining	210			\$52,691,328	68%	1%
Boat Loan	Banking	456	\$128,128,713	87%	\$111,471,981	20%	65%
Marina/slip/yacht club			\$69,507,991	100%	\$69,507,991	100%	100%
Land storage/boatel			\$13,003,250	100%	\$13,003,250	100%	100%
Haul out/paint			\$22,230,101	100%	\$22,230,101	100%	100%
Engine Repair & Maintenance	Automotive Repair Service	479	\$45,396,243	95%	\$43,126,431	100%	95%
Engine Purchase			\$10,561,543	95%	\$10,033,466		
Retail Margin	Custom Sector				\$2,909,705	29%	98%
Transportation Margin	Motor Freight Transport	435			\$50,167	1%	82%
Producer	Internal Combustion Engines	308			\$7,023,426	70%	98%
Electronics/electric maint & repair	Electrical Repair Service	480	\$10,278,859	100%	\$10,278,859	100%	100%
Electronics/electric equipment			\$12,274,379	75%	\$9,205,784		
Retail Margin	Retail Trade	455			\$2,761,735	30%	95%
Wholesale Margin	Wholesale Trade	447			\$616,788	7%	95%
Producer	Communications Equipment	400			\$5,827,261	63%	34%
Sail maintenance & repair	Canvas Products	128	\$2,920,128	100%	\$2,920,128	100%	100%
Sail purchase			\$1,017,326	100%	\$1,017,326		
Retail Margin	Custom Sector				\$295,024	29%	100%
Transportation Margin	Motor Freight Transport	435			\$10,173	1%	82%
Producer	Canvas Products	128			\$712,128	70%	100%
Boating Equipment repair	Custom Sector		\$23,360,179	100%	\$23,360,179	100%	100%
Boating Equipment new			\$34,025,636	95%	\$32,324,354		
Retail Margin	Retail Trade	455			\$10,052,874	31%	99%
Wholesale Margin	Wholesale Trade	447			\$678,811	2%	95%
Transportation Margin	Motor Freight Transport	435			\$258,595	1%	82%
Producer	Motor Vehicle Parts & Acc.	386			\$21,334,073	66%	25%
Boat Yard Services/Haul & Rep.	Custom Sector		\$27,161,900	100%	\$27,161,900	100%	100%
Boat Trailer maint. & repair	Automotive Repair/Service	479	\$6,002,228	87%	\$5,221,938	100%	98%
Boat Trailer new			\$2,038,996	97%	\$1,977,826		
Retail Margin	Custom Sector				\$448,966	23%	99%
Wholesale Margin	Wholesale Trade	447			\$13,845	1%	95%
Transportation Margin	Motor Freight Transport	435			\$23,734	1%	82%
Producer	Travel Trailers and Campers	397			\$1,483,369	75%	2%
Insurance	Insurance Agents and Brokers	460	\$28,141,267	87%	\$24,482,903	13%	95%
Club	Associations	503	\$2,178,228	100%	\$2,178,228	100%	95%
Taxes	State and Local Gov't	523	\$2,963,983	100%	\$2,963,983	100%	100%
Magazines, publications			\$2,684,275	45%	\$1,207,924		
Retail Margin	Miscellaneous Retail	455			\$277,822	23%	95%
Producer	Periodicals	175			\$809,309	67%	12%
Boat shows	Custom Sector		\$1,542,561	100%	\$1,542,561	100%	100%
Specialty Clothing			\$5,302,156	87%	\$4,612,876		
Retail Margin	Apparel & Accessories Stores	452			\$1,725,216	37%	92%
Wholesale Margin	Wholesale Trade	447			\$230,644	5%	95%
Transportation Margin	Motor Freight Transport	435			\$23,064	1%	82%
Producer	Apparel From Purchased Material	124			\$2,629,339	57%	26%
New Boat			\$72,256,314	100%	\$72,256,314		
Retail Margin	Custom Sector				\$10,188,140	14%	100%
Transportation Margin	Motor Freight Transport	435			\$650,307	1%	82%
Producer	Boat Building & Repair	393			\$61,417,867	85%	2%
Brokered Used Boat	Custom Sector		\$72,256,314	100%	\$72,256,314	15%	100%
TOTALS			\$1,011,457,468	94%	\$946,946,400		

Table A-4 continued.

Multipliers	(9) Employment Multipliers				(10) Personal Income Multipliers				(11) Total Income Multipliers				(12) Output	
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Type I	Type III
Lodging	31.6034	1.1185	23.3467	56.0685	0.5604	0.0228	0.4948	1.0781	0.825	0.0448	0.8616	1.7314	1.0705	2.5154
Restaurant meals	32.8538	4.8721	26.9171	64.643	0.3938	0.1066	0.5705	1.0709	0.4977	0.1967	0.9933	1.6877	1.329	2.9949
Groceries														
Retail Margin	29.9176	3.0003	23.4866	56.4045	0.531	0.0674	0.4978	1.0962	0.6305	0.143	0.8667	1.6402	1.2271	2.6806
Wholesale Margin	15.9412	0.8655	11.7728	28.5794	0.5583	0.0183	0.2495	0.8261	0.6959	0.0363	0.4345	1.1667	1.564	1.785
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	6.5465	5.2154	8.239	20.0009	0.1089	0.1354	0.1746	0.419	0.2173	0.2226	0.3041	0.744	1.4	1.9
Fishing & Other Trip Supplies														
Retail Margin	48.784	1.5284	36.1718	86.4842	0.574	0.0343	0.7666	1.375	0.7519	0.0728	1.3349	2.1596	1.1157	3.3542
Wholesale Margin	15.9412	0.8655	11.7728	28.5794	0.5583	0.0183	0.2495	0.8261	0.6959	0.0363	0.4345	1.1667	1.564	1.785
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	11.6239	3.6998	10.734	26.0577	0.2109	0.1009	0.2275	0.5393	0.4332	0.1534	0.3961	0.9827	1.3015	1.9658
Marina/Yacht Club	17.0089	3.2051	14.3758	34.5898	0.4437	0.0633	0.3011	0.8239	0.634	0.1287	0.5288	1.3011	1.2037	2.0934
Boat Launch Fee														
Equipment Rental	59.4509	1.7928	44.0308	105.2745	0.4009	0.0348	0.9332	1.3689	0.8367	0.0841	1.6249	2.5457	1.1286	3.8536
Other Trip Supplies														
Boat Fuel Costs														
Docking and Mooring														
Retail Margin	23.2698	3.0093	18.7499	45.029	0.5405	0.0676	0.3974	1.0055	0.6179	0.1434	0.6919	1.4532	1.2277	2.3881
Wholesale Margin	2.6329	0.0055	1.5715	4.2099	0.1125	0.0002	0.0333	0.1459	0.3017	0.0003	0.058	0.36	1.0009	1.0981
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	0.859	0.0019	0.3612	1.2221	0.0474	0.0001	0.0077	0.0552	0.2123	0.0001	0.0133	0.2258	1.0002	1.0226
Transportation														
Retail Margin	23.2698	3.0093	18.7499	45.029	0.5405	0.0676	0.3974	1.0055	0.6179	0.1434	0.6919	1.4532	1.2277	2.3881
Wholesale Margin	2.6329	0.0055	1.5715	4.2099	0.1125	0.0002	0.0333	0.1459	0.3017	0.0003	0.058	0.36	1.0009	1.0981
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	0.859	0.0019	0.3612	1.2221	0.0474	0.0001	0.0077	0.0552	0.2123	0.0001	0.0133	0.2258	1.0002	1.0226
Boat Loan	12.0362	6.2862	13.0728	31.3951	0.3242	0.1539	0.2771	0.7552	0.5463	0.2595	0.4824	1.2882	1.3835	2.1926
Marina/slip/yacht club														
Land storage/boatel														
Haul out/paint														
Engine Repair & Maintenance	11.391	6.2596	12.5935	30.244	0.216	0.1263	0.2669	0.6092	0.375	0.2081	0.4647	1.0478	1.349	2.1284
Engine Purchase														
Retail Margin	15.5804	3.657	13.6655	32.903	0.3292	0.0618	0.283	0.7032	0.5445	0.1417	0.5012	1.2042	1.2272	2.073
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	5.2091	2.897	5.6782	13.7842	0.228	0.0926	0.1203	0.441	0.3935	0.1468	0.2095	0.7498	1.2721	1.6235
Electronics/electric maint & repair	12.6656	3.6779	11.4483	27.7918	0.2233	0.1034	0.2426	0.5693	0.3597	0.1726	0.4225	0.9548	1.2802	1.9887
Electronics/electric equipment														
Retail Margin	48.784	1.5284	36.1718	86.4842	0.574	0.0343	0.7666	1.375	0.7519	0.0728	1.3349	2.1596	1.1157	3.3542
Wholesale Margin	15.9412	0.8655	11.7728	28.5794	0.5583	0.0183	0.2495	0.8261	0.6959	0.0363	0.4345	1.1667	1.564	1.785
Producer	6.6978	0.4362	4.7762	11.9102	0.3457	0.0169	0.1012	0.4638	0.8715	0.0372	0.1763	1.0849	1.0522	1.3478
Sail maintenance & repair	13.7821	1.6862	10.8353	26.3036	0.3567	0.0439	0.2296	0.6302	0.599	0.0694	0.3999	1.0682	1.125	1.7956
Sail purchase														
Retail Margin	14.8466	3.6626	13.1369	31.6462	0.2961	0.0586	0.2711	0.6581	0.5324	0.1403	0.4813	1.1725	1.2258	2.0388
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	13.7821	1.6862	10.8353	26.3036	0.3567	0.0439	0.2296	0.6302	0.599	0.0694	0.3999	1.0682	1.125	1.7956
Boating Equipment repair	15.0527	3.4116	13.1012	31.5655	0.334	0.0608	0.2722	0.6909	0.5606	0.1341	0.4809	1.1893	1.2172	2.028
Boating Equipment new														
Retail Margin	48.784	1.5284	36.1718	86.4842	0.574	0.0343	0.7666	1.375	0.7519	0.0728	1.3349	2.1596	1.1157	3.3542
Wholesale Margin	15.9412	0.8655	11.7728	28.5794	0.5583	0.0183	0.2495	0.8261	0.6959	0.0363	0.4345	1.1667	1.564	1.785
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	7.3266	3.4836	7.5724	18.3836	0.2025	0.092	0.1605	0.455	0.3118	0.1521	0.2794	0.7434	1.2974	1.766
Boat Yard Services/Haul & Rep.	15.0527	3.4116	13.1012	31.5655	0.334	0.0608	0.2722	0.6909	0.5606	0.1341	0.4809	1.1893	1.2172	2.028
Boat Trailer maint. & repair	11.391	6.2596	12.5935	30.244	0.216	0.1263	0.2669	0.6092	0.375	0.2081	0.4647	1.0478	1.349	2.1284
Boat Trailer new														
Retail Margin	15.5804	3.657	13.6655	32.903	0.3292	0.0618	0.283	0.7032	0.5445	0.1417	0.5012	1.2042	1.2272	2.073
Wholesale Margin	15.9412	0.8655	11.7728	28.5794	0.5583	0.0183	0.2495	0.8261	0.6959	0.0363	0.4345	1.1667	1.564	1.785
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	9.1091	2.2082	7.9276	19.2448	0.2457	0.0576	0.168	0.4713	0.2457	0.0576	0.168	0.4713	1.1606	1.6512
Insurance	21.9785	2.6884	17.5995	42.2664	0.5061	0.059	0.373	0.9381	0.7809	0.1237	0.6495	1.5542	1.1803	2.2695
Club	28.5045	0.8954	20.9765	50.3764	0.8673	0.0246	0.4446	1.3365	0.8847	0.0415	0.7741	1.7003	1.0685	2.3667
Taxes	27.6755	0	19.7462	47.4216	1	0	0.4185	1.4185	1	0	0.7287	1.7287	1	2.222
Magazines, publications														
Retail Margin	15.9412	0.8655	11.7728	28.5794	0.5583	0.0183	0.2495	0.8261	0.6959	0.0363	0.4345	1.1667	1.564	1.785
Producer	14.9651	5.3629	14.5038	34.8318	0.2464	0.1283	0.1779	0.5526	0.417	0.2192	0.3098	0.9461	1.3564	1.8759
Boat shows	41.1189	2.4629	31.2453	74.827	0.5115	0.0537	0.6822	1.2274	0.6941	0.1074	1.1531	1.9545	1.1733	3.107
Specialty Clothing														
Retail Margin	34.0884	3.3229	26.6926	64.1039	0.4159	0.0746	0.5657	1.0563	0.6257	0.1583	0.9851	1.7691	1.2515	2.9034
Wholesale Margin	15.9412	0.8655	11.7728	28.5794	0.5583	0.0183	0.2495	0.8261	0.6959	0.0363	0.4345	1.1667	1.564	1.785
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	16.1403	2.7386	13.4699	32.3489	0.3209	0.0658	0.2855	0.6721	0.4271	0.1026	0.4971	1.0268	1.1956	2.0292
New Boat														
Retail Margin	15.5804	3.657	13.6655	32.903	0.3292	0.0618	0.283	0.7032	0.5445	0.1417	0.5012	1.2042	1.2272	2.073
Transportation Margin	14.9651	5.3629	14.5038	34.8318	0.3307	0.1254	0.3074	0.7635	0.5216	0.2232	0.5352	1.28	1.3884	2.286
Producer	13.594	1.5937	10.6387	25.8264	0.3228	0.0461	0.2255	0.5944	0.7293	0.0897	0.3926	1.2115	1.1548	1.8132
Brokered Used Boat	15.5804	3.657	13.6655	32.903	0.3292	0.0618	0.283	0.7032	0.5445	0.1417	0.5012	1.2042	1.2272	2.073
TOTALS														

Table A-4 continued.

Expenditure Categories	(13) Employment Impacts				(14) Personal Income Impacts			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Lodging	824	29	609	1462	\$14,614,952	\$594,613	\$12,904,136	\$28,116,308
Restaurant meals	2648	393	2170	5210	\$31,741,919	\$8,592,404	\$45,984,675	\$86,318,998
Groceries								
Retail Margin	148	15	116	279	\$2,628,916	\$333,689	\$2,464,547	\$5,427,152
Wholesale Margin	19	1	14	34	\$669,865	\$21,957	\$299,358	\$991,180
Transportation Margin	1	0	1	3	\$25,474	\$9,660	\$23,679	\$58,813
Producer	43	34	55	132	\$720,372	\$895,669	\$1,154,976	\$2,771,678
Fishing & Other Trip Supplies								
Retail Margin	379	12	281	672	\$4,461,906	\$266,626	\$5,959,055	\$10,688,364
Wholesale Margin	15	1	11	27	\$533,697	\$17,494	\$238,505	\$789,696
Transportation Margin	0	0	0	0	\$557	\$211	\$517	\$1,285
Producer	11	4	11	26	\$207,778	\$99,406	\$224,132	\$531,315
Marina/Yacht Club	2087	393	1764	4244	\$54,439,848	\$7,771,311	\$36,947,293	\$101,099,557
Boat Launch Fee	0	0	0	0				
Equipment Rental	207	6	153	366				
Other Trip Supplies	0	0	0	0				
Boat Fuel Costs								
Docking and Mooring	0	0	0	0				
Retail Margin	72	9	58	139	\$1,665,477	\$208,300	\$1,224,534	\$3,098,312
Wholesale Margin	1	0	0	1	\$30,332	\$54	\$8,978	\$39,337
Transportation Margin	1	0	1	2	\$14,638	\$5,551	\$13,607	\$33,795
Producer	0	0	0	0	\$14,929	\$31	\$2,425	\$17,385
Transportation								
Retail Margin	49	6	40	95	\$1,143,142	\$142,972	\$840,490	\$2,126,604
Wholesale Margin	1	0	1	1	\$36,702	\$65	\$10,864	\$47,598
Transportation Margin	1	0	1	3	\$28,063	\$10,642	\$26,086	\$64,791
Producer	0	0	0	0	\$15,375	\$32	\$2,498	\$17,905
Boat Loan	174	91	189	455	\$4,698,098	\$2,230,220	\$4,015,555	\$10,943,873
Marina/slip/yacht club	0	0	0	0				
Land storage/boatel	0	0	0	0				
Haul out/paint	0	0	0	0				
Engine Repair & Maintenance	467	256	516	1239	\$8,849,544	\$5,174,525	\$10,934,922	\$24,958,991
Engine Purchase								
Retail Margin	13	3	11	27	\$272,191	\$51,099	\$234,014	\$581,543
Transportation Margin	0	0	0	0	\$68	\$26	\$63	\$157
Producer	25	14	27	66	\$1,098,520	\$446,153	\$579,614	\$2,124,769
Electronics/electric maint & repair	130	38	118	286	\$2,295,269	\$1,062,834	\$2,493,651	\$5,851,755
Electronics/electric equipment								
Retail Margin	38	1	28	68	\$451,792	\$26,997	\$603,387	\$1,082,255
Wholesale Margin	1	0	0	1	\$21,918	\$718	\$9,795	\$32,431
Producer	8	1	6	15	\$433,557	\$21,195	\$126,919	\$581,672
Sail maintenance & repair	40	5	32	77	\$1,041,610	\$128,194	\$670,461	\$1,840,265
Sail purchase								
Retail Margin	1	0	1	3	\$25,336	\$5,010	\$23,194	\$56,306
Transportation Margin	0	0	0	0	\$28	\$10	\$26	\$64
Producer	7	1	5	13	\$177,811	\$21,884	\$114,453	\$314,148
Boating Equipment repair	352	80	306	737	\$7,802,837	\$1,419,332	\$6,359,764	\$16,140,668
Boating Equipment new								
Retail Margin	151	5	112	268	\$1,776,633	\$106,165	\$2,372,765	\$4,255,872
Wholesale Margin	0	0	0	0	\$7,561	\$248	\$3,379	\$11,187
Transportation Margin	0	0	0	0	\$561	\$213	\$521	\$1,295
Producer	26	12	27	65	\$712,825	\$323,851	\$564,980	\$1,601,656
Boat Yard Services/Haul & Rep.	409	93	356	857	\$9,072,699	\$1,650,320	\$7,394,776	\$18,767,459
Boat Trailer maint. & repair	58	32	64	155	\$1,105,380	\$646,340	\$1,365,861	\$3,117,581
Boat Trailer new								
Retail Margin	2	0	1	3	\$33,211	\$6,235	\$28,553	\$70,955
Wholesale Margin	0	0	0	0	\$51	\$2	\$23	\$76
Transportation Margin	0	0	0	0	\$77	\$29	\$72	\$178
Producer	0	0	0	0	\$5,467	\$1,282	\$3,738	\$10,487
Insurance	64	8	51	123	\$1,471,407	\$171,533	\$1,084,440	\$2,727,380
Club	59	2	43	104	\$1,794,718	\$50,905	\$920,018	\$2,765,641
Taxes	82	0	59	141	\$2,963,983	\$0	\$1,240,427	\$4,204,410
Magazines, publications								
Retail Margin	1	0	1	2	\$33,891	\$1,111	\$15,146	\$50,148
Producer	1	0	1	2	\$16,033	\$8,348	\$11,576	\$35,957
Boat shows	63	4	48	115	\$788,978	\$82,780	\$1,021,495	\$1,893,350
Specialty Clothing								
Retail Margin	20	2	16	38	\$246,883	\$44,283	\$335,806	\$627,033
Wholesale Margin	0	0	0	0	\$6,117	\$200	\$2,733	\$9,050
Transportation Margin	0	0	0	0	\$31	\$12	\$29	\$72
Producer	6	1	5	13	\$125,044	\$25,640	\$111,250	\$261,896
New Boat								
Retail Margin	22	5	20	47	\$472,841	\$88,767	\$406,521	\$1,010,235
Transportation Margin	0	0	0	0	\$1,587	\$602	\$1,475	\$3,664
Producer	14	2	11	27	\$333,666	\$47,652	\$233,091	\$614,409
Brokered Used Boat	169	40	148	357	\$3,567,534	\$669,738	\$3,067,159	\$7,622,117
TOTALS	8914	1600	7490	18004	\$164,699,699	\$33,485,140	\$154,682,007	\$356,411,079

Table A-4 continued.

Expenditure Categories	(15) Total Income Impacts				(16) Output Impacts	
	Direct	Indirect	Induced	Total	Direct	Total
Lodging	\$21,515,587	\$1,168,362	\$22,470,097	\$45,154,045	\$27,918,104	\$65,600,373
Restaurant meals	\$40,116,692	\$15,854,839	\$80,064,115	\$136,035,646	\$107,122,933	\$241,401,408
Groceries						
Retail Margin	\$3,121,528	\$707,975	\$4,290,925	\$8,120,429	\$6,075,221	\$13,271,322
Wholesale Margin	\$834,962	\$43,554	\$521,326	\$1,399,842	\$1,876,534	\$2,141,696
Transportation Margin	\$40,180	\$17,193	\$41,227	\$98,600	\$106,950	\$176,093
Producer	\$1,437,436	\$1,472,495	\$2,011,616	\$4,921,547	\$9,260,975	\$12,568,467
Fishing & Other Trip Supplies						
Retail Margin	\$5,844,786	\$565,900	\$10,376,653	\$16,787,339	\$8,672,733	\$26,073,390
Wholesale Margin	\$665,234	\$34,700	\$415,353	\$1,115,287	\$1,495,079	\$1,706,340
Transportation Margin	\$878	\$376	\$901	\$2,154	\$2,336	\$3,847
Producer	\$426,786	\$151,129	\$390,236	\$968,151	\$1,282,231	\$1,936,696
Marina/Yacht Club	\$77,793,562	\$15,789,678	\$64,889,890	\$159,649,571	\$147,704,124	\$256,874,540
Boat Launch Fee						
Equipment Rental						
Other Trip Supplies						
Boat Fuel Costs						
Docking and Mooring						
Retail Margin	\$1,903,975	\$441,868	\$2,131,996	\$4,477,838	\$3,782,991	\$7,358,606
Wholesale Margin	\$81,344	\$81	\$15,638	\$97,063	\$269,862	\$296,069
Transportation Margin	\$23,088	\$9,880	\$23,690	\$56,658	\$61,456	\$101,187
Producer	\$66,864	\$31	\$4,189	\$71,116	\$315,016	\$322,071
Transportation						
Retail Margin	\$1,306,841	\$303,287	\$1,463,349	\$3,073,476	\$2,596,550	\$5,050,763
Wholesale Margin	\$98,426	\$98	\$18,922	\$117,446	\$326,533	\$358,244
Transportation Margin	\$44,263	\$18,941	\$45,417	\$108,622	\$117,821	\$193,992
Producer	\$68,863	\$32	\$4,314	\$73,242	\$324,433	\$331,699
Boat Loan	\$7,916,629	\$3,760,507	\$6,990,631	\$18,667,767	\$20,048,793	\$31,773,750
Marina/slip/yacht club						
Land storage/boatel						
Haul out/paint						
Engine Repair & Maintenance	\$15,363,791	\$8,525,880	\$19,038,810	\$42,928,480	\$55,268,677	\$87,200,780
Engine Purchase						
Retail Margin	\$450,256	\$117,183	\$414,424	\$995,769	\$1,014,852	\$1,714,208
Transportation Margin	\$107	\$46	\$110	\$263	\$286	\$470
Producer	\$1,895,911	\$707,293	\$1,009,386	\$3,612,589	\$6,129,067	\$7,822,137
Electronics/electric maint & repair	\$3,697,306	\$1,774,131	\$4,342,818	\$9,814,255	\$13,158,996	\$20,441,567
Electronics/electric equipment						
Retail Margin	\$591,816	\$57,300	\$1,050,693	\$1,699,809	\$878,161	\$2,640,073
Wholesale Margin	\$27,320	\$1,425	\$17,058	\$45,803	\$61,400	\$70,076
Producer	\$1,092,986	\$46,654	\$221,105	\$1,360,620	\$1,319,609	\$1,690,334
Sail maintenance & repair	\$1,749,157	\$202,657	\$1,167,759	\$3,119,281	\$3,285,144	\$5,243,382
Sail purchase						
Retail Margin	\$45,547	\$12,003	\$41,181	\$100,315	\$104,876	\$174,434
Transportation Margin	\$44	\$19	\$45	\$107	\$116	\$191
Producer	\$298,595	\$34,595	\$199,346	\$532,487	\$560,801	\$895,088
Boating Equipment repair	\$13,094,978	\$3,131,895	\$11,234,264	\$27,781,708	\$28,434,010	\$47,374,444
Boating Equipment new						
Retail Margin	\$2,327,265	\$225,329	\$4,131,755	\$6,684,349	\$3,453,292	\$10,381,851
Wholesale Margin	\$9,424	\$492	\$5,884	\$15,800	\$21,180	\$24,173
Transportation Margin	\$885	\$379	\$908	\$2,171	\$2,355	\$3,878
Producer	\$1,097,574	\$535,411	\$983,522	\$2,616,859	\$4,567,006	\$6,216,536
Boat Yard Services/Haul & Rep.	\$15,226,102	\$3,641,591	\$13,062,569	\$32,303,004	\$33,061,465	\$55,084,333
Boat Trailer maint. & repair	\$1,919,062	\$1,064,952	\$2,378,102	\$5,362,116	\$6,903,507	\$10,892,086
Boat Trailer new						
Retail Margin	\$54,937	\$14,298	\$50,565	\$121,496	\$123,824	\$209,154
Wholesale Margin	\$64	\$3	\$40	\$107	\$144	\$164
Transportation Margin	\$122	\$52	\$125	\$299	\$324	\$534
Producer	\$5,467	\$1,282	\$3,738	\$10,487	\$25,824	\$36,740
Insurance	\$2,270,345	\$359,639	\$1,888,320	\$4,518,595	\$3,431,539	\$6,598,219
Club	\$1,830,724	\$85,877	\$1,601,858	\$3,518,458	\$2,211,064	\$4,897,451
Taxes	\$2,963,983	\$0	\$2,159,855	\$5,123,838	\$2,963,983	\$6,585,971
Magazines, publications						
Retail Margin	\$42,244	\$2,204	\$26,376	\$70,824	\$94,941	\$108,357
Producer	\$27,134	\$14,263	\$20,158	\$61,561	\$88,259	\$122,062
Boat shows	\$1,070,661	\$165,650	\$1,778,686	\$3,014,994	\$1,809,939	\$4,792,759
Specialty Clothing						
Retail Margin	\$371,423	\$93,969	\$584,767	\$1,050,159	\$742,906	\$1,723,494
Wholesale Margin	\$7,624	\$398	\$4,760	\$12,782	\$17,135	\$19,556
Transportation Margin	\$49	\$21	\$51	\$121	\$131	\$216
Producer	\$166,427	\$39,980	\$193,704	\$400,111	\$465,887	\$790,714
New Boat						
Retail Margin	\$782,168	\$203,565	\$719,922	\$1,729,815	\$1,762,966	\$2,977,862
Transportation Margin	\$2,503	\$1,071	\$2,569	\$6,143	\$6,663	\$10,971
Producer	\$753,850	\$92,720	\$405,816	\$1,252,282	\$1,193,674	\$1,874,237
Brokered Used Boat	\$5,901,376	\$1,535,879	\$5,431,735	\$13,051,265	\$13,301,385	\$22,467,649
TOTALS	\$238,447,152	\$63,031,029	\$270,343,265	\$573,914,963	\$525,826,065	\$978,626,703

# GLOSSARY

---

**boat related expenditures** — Boating expenditures that relate directly to the vessel itself rather than a particular trip or group of trips taken on the vessel. Includes items such as slip fees, boat repairs, loans, insurance, equipment, etc.

**direct economic activity** — Of the amount of initial expenditures made by boaters, some of it “leaks” and has little economic impact on Maryland. However, whatever does remain affects employment, income and economic output. The direct activity measure is the effect on the sectors of the economy where the initial expenditures are made.

**full time equivalent (FTE)** — Expresses the number of jobs in terms of full time jobs even though some of the jobs may be part time. Two half time jobs equal one full time equivalent job.

**IMPLAN (Impact Analysis for PLANning)** — An input-output model of the U.S. economy originally developed by the U.S. Forest Service used for the calculation of regional and national economic activity measures.

**indirect economic activity** — The sectors of the economy where initial spending on boating occur, are supported by other sectors of the economy. A marina or boatyard buys supplies and services from many other parts of the Maryland economy. Indirect activity measures the effect of spending in the direct sectors on the supporting industries in the State.

**induced economic activity** — When spending occurs in the direct and indirect sectors, it creates income and profits for employees and business owners. This income is spent throughout the Maryland economy on a variety of goods and services. These impacts are measured by the induced economic activity measures.

**leakage** — The amount of expenditures at any market level that is used to import goods or services into the region, thus resulting in the economic impact occurring outside the area of study.

**margin** — When a good is purchased by the final consumer it has passed through several stages from the manufacture to the retail store. At each stage, the cost of the good increases because of the value added. For example, the transportation sector adds value to the good by making it physically available to the purchaser. Margins are a way of allocating the final purchase price to the value added at each sector. For any individual sector, the margin can be calculated as the difference between the selling price and the cost of the good to that sec-

tor. The margin can be given as either an absolute dollar amount or a percentage of the purchase price.

**multiplier** — The amount that expenditures are multiplied by after adjusting for in-state expenditures, margins and regional purchase coefficients that is used to obtain the economic activity measure. The multipliers are obtained directly or calculated from IMPLAN.

**out-of-state boater** — For this study, this refers to boaters who have boats registered or documented in Maryland but are not residents of the State. Their spending is included in the calculations presented here.

**personal income** — Wages and other compensation paid to employees and individuals.

**regional purchase coefficient (RPC)** — A percentage from 0-100% that helps regionalize the IMPLAN model by adjusting for the capacity within the region to produce the item. If there is sufficient production capacity in the region to produce the quantity consumed in the region, the RPC is 100%. If the production capacity is lower than consumption, the RPC is less than 100%.

**total income** — Personal income plus proprietor income, profits, rents and other compensation.

**transient boater** — Boaters who spend money in Maryland but do not have their boats registered or documented here. These expenditures were not estimated in this study.

**trip-related expenditure** — Expenditures made that are directly related to a boat trip as opposed to an expenditure on the boat itself. Examples include boat fuel, groceries, lodging, fishing bait and tackle, etc.



# LITERATURE CITED

---

Ahmadi, M. P. Ganguly, N. McPherson and R. Schoepfle. 1992. Christopher Columbus Center of Marine Research and Exploration An Economic Impact Study: 1992 Update. Department of Economic and Employment Development, Office of Research, Baltimore, MD. 28pp.

A.T. Kearney. 1991. Impact of oil and gas development on the recreation and tourism off the Florida Straits. Report to U.S. Department of Interior, Minerals Management Service, Atlantic OCS Region Contract # 14-35-0001-30482.

Bockstael, N.E., K.E. McConnell and I.E. Strand. 1987. Benefits from improvements in Chesapeake Bay Water Quality. EPA Report. 160pp.

Fedler, A.J. and J.D. Schwartz. 1987. Boat shows in Annapolis: Gauging the economic impacts. University of Maryland Sea Grant Publication Number UM-SG-MAP-87-01. 7pp.

Graefe, A. R. 1985. Selected highlights from the 1983 Maryland boater survey. Paper presented at the Maryland Marine Trades Conference, March 7, 1985.

Minnesota IMPLAN Group. 1993. Micro IMPLAN 1990/1985 Database Documentation. 78pp.

Professional Consulting Associates (PCA). 1994. Economic impact study of recreational marine industry on Baltimore County, Maryland - June, 1994

Radtke, H, C.M. Dewees and F.J. Smith. 1987. The fishing industry and Pacific coastal communities: Understanding the assessment of economic impacts. University of California Sea Grant Marine Advisory Program Publication # UCSGMAP-87-1.